

CHAPTER 6

AIRBRUSH

Overview

Introduction

Airbrush art is a unique and meticulous art form that is experiencing a rebirth in popularity. Even if your shop does not have airbrush capabilities, chances are you use computer software programs with airbrush effects or occasionally use cans of spray paint. With a fundamental knowledge in the mixture of air and paint, it is possible for you to create art using the subtle effects only airbrushes or air painting can produce.

Objectives

The material in this chapter enables you to do the following:

- Identify airbrushes and airbrush component parts.
 - Install moisture traps and regulators to air sources.
 - Select pigments for airbrush illustrations.
 - Discuss the importance of comprehensive thumbnail sketches in airbrush illustrations.
 - Identify the procedures for varying background density in airbrush illustrations.
 - State the differences in paint application for creative effects.
 - Describe procedures for preparing photographs for airbrush retouching.
 - Learn how to remove or reduce unwanted backgrounds by silhouetting or vignetting with the airbrush.
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Overview, Continued

Acronyms

The following table contains a list of acronyms that you must know to understand the material in this chapter.

| Acronym | Meaning |
|---------|------------------------|
| PSI | Pounds Per-Square-Inch |

In this chapter

This chapter covers the following topics:

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Airbrushes

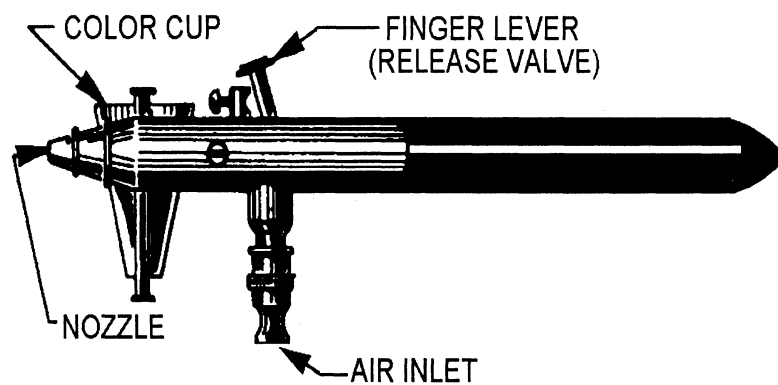
Introduction

Airbrush art combines the graphic qualities of illustration with the continuous tones of photography. Although you may not have the opportunity to practice traditional airbrush techniques, you probably have an airbrush effects option in the graphics software of your computer. Understanding the principles of traditional airbrush rendering will help you maximize computer-generated airbrush options. For further study of airbrush art, review the work of contemporary super-realist Audrey Flack or the forties pin-ups of Vargas.

Airbrushes

Airbrushes are precision tools that combine liquids such as paints, inks, and water with compressed air to create a fine mist or spray. The spray from the airbrush applies paint in soft tonal gradations ranging from the highest discernable tint of color to complete opacity. All airbrushes have a color cup or bottle to hold pigment, an inlet for compressed air, a nozzle through which paint is sprayed under pressure, and a release valve (finger lever) that enables the operator to use air to propel the paint and to control the amount of air and paint that comes out of the nozzle. The three basic types of airbrush are the single-action, the double-action, and the oscillating airbrush. The main differences in airbrushes are their sensitivity and control.

Figure 6-1 shows the parts of an airbrush.



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Figure 6-1.—Airbrush nomenclature.

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Airbrushes, Continued

Single-action airbrushes

The single-action airbrush, sometimes known as a poster brush, is simple in design. With single-action airbrushes, downward pressure on the finger lever releases the flow of air and paint. Some models of single-action airbrushes allow adjustment of the nozzle to regulate the amount of fluid flow. You may also adjust the finger lever to regulate the amount of air passing through the airbrush. These airbrushes work well for simple illustrations and large backgrounds. Single-action airbrushes may use heavy-bodied pigments such as tempura or casein.

Figure 6-2 is an example of a single-action airbrush.

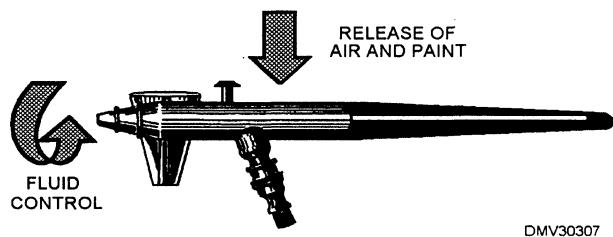


Figure 6-2.—Adjustments on a single-action airbrush.

Adjust the spray pattern of single-action airbrushes before use. After adjustment, only increasing and decreasing the distance between the airbrush and the paper surface will vary the spray pattern.

To adjust single-action airbrushes:

| Step | Action |
|------|--|
| 1 | Turn off the fluid control at the nozzle. |
| 2 | Hold the airbrush ½ inch in front of a scrap of paper. |
| 3 | Depress the finger lever and slowly open the nozzle (fluid control) until a wisp of color appears. |
| 4 | To make the spray pattern wider, continue to open the fluid control. |

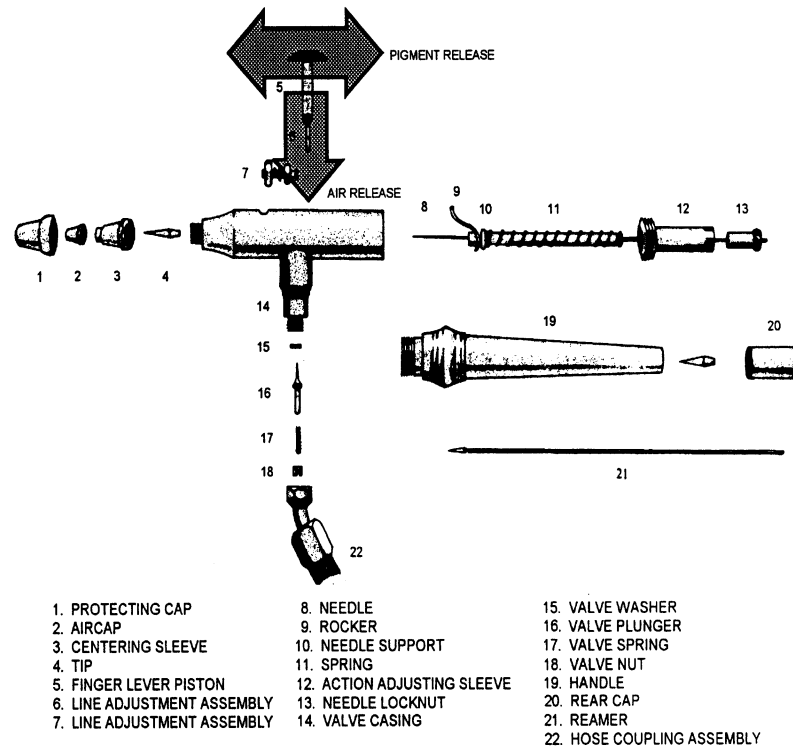
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Airbrushes, Continued

Double-action airbrushes

Double-action airbrushes allow control and variation of the spray pattern during each stroke. Two separate finger actions control the spray pattern of double-action airbrushes. The first action is to depress the finger lever releasing air only. The second action is to pull the finger lever back releasing pigment. Pulling the lever further back releases more pigment and enlarges the spray pattern. Increasing or decreasing the distance between the airbrush and the paper surface will also vary spray pattern. The double-action airbrush, sometimes called a pencil brush, is a good general-purpose brush.

Figure 6-3 shows the parts of a double-action airbrush.



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Figure 6-3.—Parts of a double-action airbrush.

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Airbrushes, Continued

Double-action
airbrushes
(Continued)

Figure 6-4 illustrates different spray patterns.

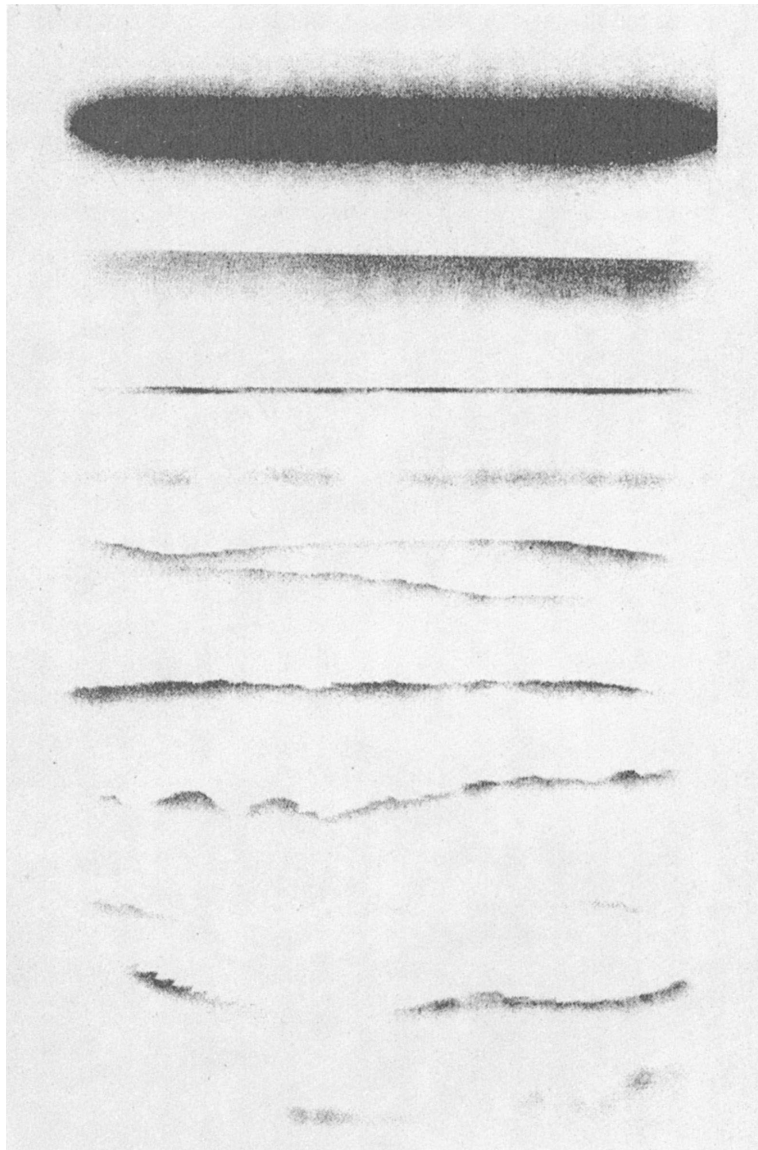


Figure 6-4.—Varying the spray pattern.

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Airbrushes, Continued

Double-action airbrushes (Continued)

Adjust the spray of double-action airbrushes before use. After adjustment, control the spray pattern by how far back you pull the finger lever (pigment flow) or increasing or decreasing the distance between the airbrush and paper. Setting the adjustment screw, located on the side of the airbrush near the finger lever, makes the flow of pigment constant. The double-action airbrush then works like a single-action airbrush and only requires the depression of the finger lever to release air.

To adjust the spray pattern of double-action airbrushes:

| Step | Action |
|------|--|
| 1 | Turn off fluid control at the nozzle. |
| 2 | Hold the airbrush ½ inch in front of a scrap of paper. |
| 3 | Depress the finger lever and slowly open the nozzle (fluid control) until a wisp of color appears. |
| 4 | To make the spray pattern wider, continue to open the nozzle. |

Using a double-action airbrush

Three distinct motions control and coordinate the use of double-action airbrushes. During these three actions, keep your hand and arm in motion until the end of a stroke. At the end of a stroke, allow the finger lever to move forward to stop paint flow, then, release the lever to stop the air. Each action must follow the others closely. The entire movement should be slow, smooth, and steady. Move the whole arm across the paper from the shoulder, not the wrist. Do not dip your hand, turn your wrist, or change the angle of the brush. Begin working about 8 inches above and at a 90° angle to the paper surface.

Continued on next page

Airbrushes, Continued

Using a double-action airbrush (Continued)

To use double-action airbrushes:

| Step | Action |
|------|---|
| 1 | Adjust the airbrush. |
| 2 | Position yourself comfortably with the airbrush in your hand and the hose out of the way. |
| 3 | Set the hand in motion. |
| 4 | Press the finger lever down, releasing air not paint. |
| 5 | Gently pull the finger lever back to release paint. Running all three actions together results in a sudden burst of paint at the beginning of a stroke. |

Figure 6-5 illustrates how to hold a double-action airbrush above the paper surface.

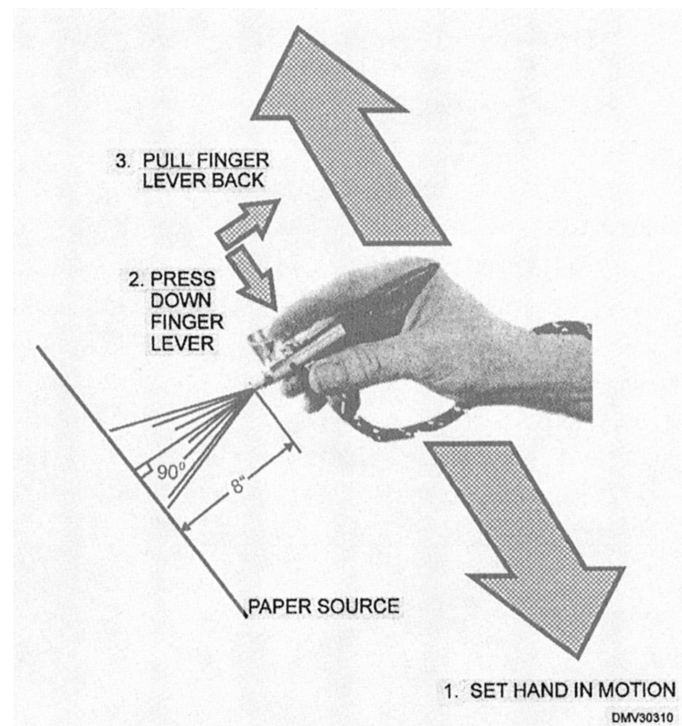


Figure 6-5.—Holding and moving the airbrush.

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Airbrushes, Continued

Oscillating airbrushes

Oscillating airbrushes are small airbrushes with a reciprocating needle that allows precise applications and minute spray patterns. The slow action of the needle provides better spray control. The fine spray pattern eliminates the need for masking massive areas of the illustration to prevent unwanted coloration. You may rest the bottom of the color cup on the illustration to increase stability and facilitate accuracy. The oscillating airbrush is the ideal tool for portraits, still lifes, landscapes, and photographic retouching. You can also use oscillating airbrushes in freehand work. Operation of the oscillating airbrush is similar to that of the double-action airbrush.

Holding an airbrush

Hold an airbrush with your thumb, middle, ring, and little fingers on the air inlet. Position the index finger above and lightly on top of the finger lever. Wrap the air hose below the thumb, over the wrist (toward the inside of your body) and under the elbow to keep the hose behind you and out of the way. Move the whole arm across the paper from the shoulder, not the wrist, in a slow, smooth, steady stroke. Do not dip your hand, turn your wrist, or change the angle of the brush. Begin the release of air and pigment before reaching the edge of the paper surface. Stop the flow of air and pigment after passing the opposite edge of the paper. Work approximately 8 inches above and at a 90° angle to the paper surface.

Left-handed airbrushes

Airbrushes are available that have the color cup or bottle on the left side of the airbrush. These airbrushes allow the left-handed artist to paint less awkwardly and with less fatigue. If you are left handed, place the holder for the airbrush on your left to prevent draping the air hose across your lap while you paint.

Pressure-fed airbrushes

Pressure-fed airbrushes have nine, 2-ounce color bottles in a pressurized canister. The canister connects to a multiple hose and selection valve that allow selection of one of the nine bottles or a mixture of any two adjacent colors. Pressure-fed airbrushes are intended for professional use in a production environment.

Continued on next page

Airbrushes, Continued

Gravity-fed airbrushes

Gravity-fed airbrushes have the color cup positioned on top of the airbrush or over the nozzle. The color cup is out of the way of your hand and does not obstruct your view of the illustration. Gravity-fed airbrushes may use thicker pigments. Less air pressure is required to disburse paint and the airbrush clogs less often.

Figure 6-6 is an example of a gravity-fed airbrush.

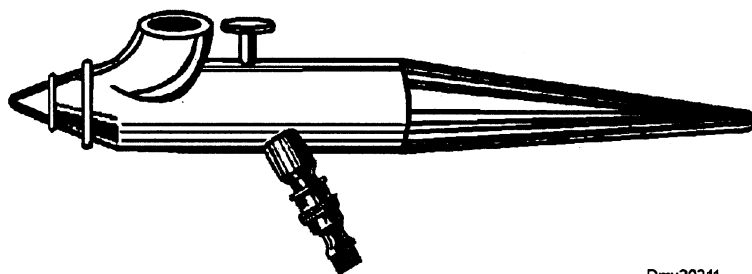


Figure 6-6.—A gravity-fed airbrush.

Siphon-fed airbrushes

Siphon-fed airbrushes have side-mounted color cups or bottles and use air passing through the airbrush to suck paint from the base of the color cup. This is the most common type of airbrush system. Changing colors is as easy as removing one color cup and replacing it with a color cup filled with another color. The size of color cups or bottles varies.

Figure 6-7 is an example of a siphon-fed airbrush.

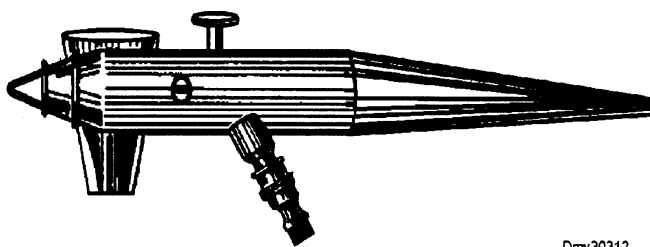


Figure 6-7.—A siphon-fed airbrush.

Component Parts

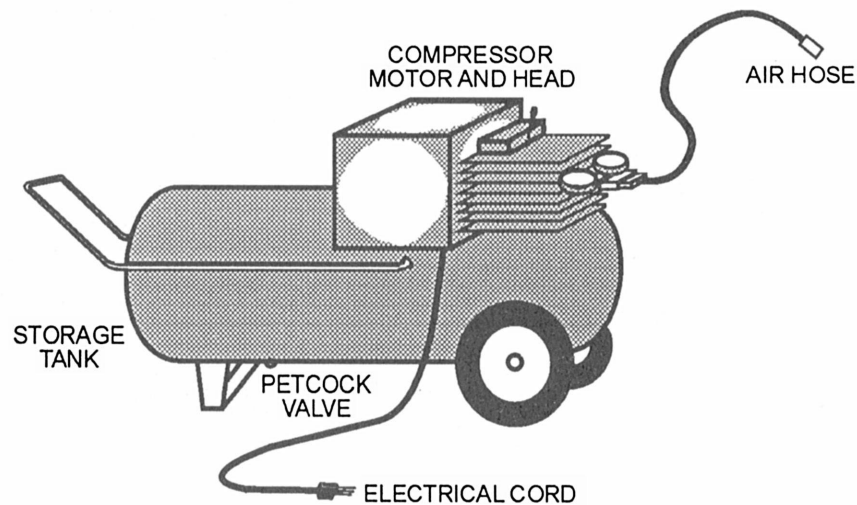
Introduction

The component parts of an airbrush system include an air source, air hoses, moisture traps, and regulators.

Air sources

Any nonflammable air source capable of generating enough pounds per square inch (PSI) pressure to propel pigment in air is suitable for airbrush use. **DO NOT USE FLAMMABLE GASES SUCH AS OXYGEN.** Air supplies may include pressurized aerosol cans, cylinders of inert gas, inner tubes, or air compressors with or without air storage tanks. Compressors without tanks operate continuously. Compressors with tanks operate until air builds to a specified pressure, then shuts off. If air pressure drops, the motor on the compressor turns on. Air compressors are the preferred source of air supply because the air pressure is continual and can be regulated and stored. Air compressors may be located away from the airbrush artist to maintain a quiet work environment.

Figure 6-8 shows an air compressor with a storage tank.



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Figure 6-8.—An air compressor with a storage tank.

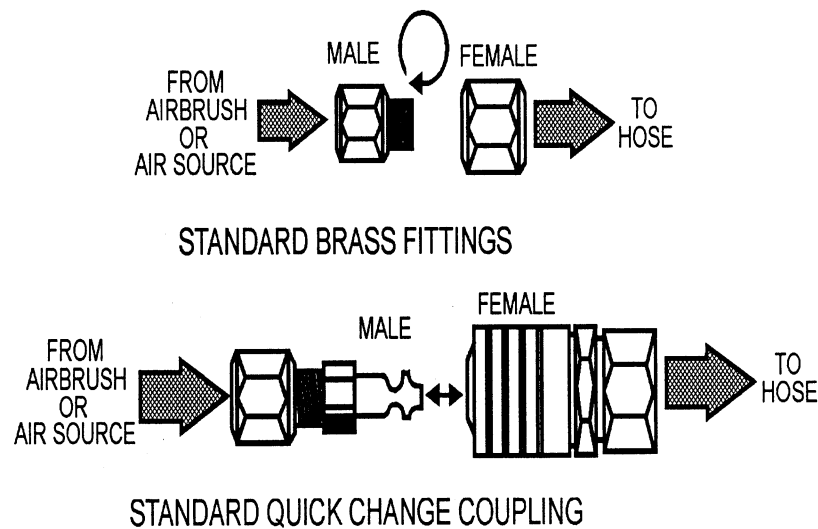
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Component Parts, Continued

Air hoses

Connecting the air source to an airbrush is a flexible air hose. Air hoses are available in different lengths. Some air hoses are permanently curled to eliminate the hazards of someone crimping or stepping on hoses. A multiple hose for a pressure-fed air painting system allows pigment to be removed from two color bottles simultaneously. The ends of air hoses are capped with brass screw fittings that attach to the air inlet of the airbrush and the air outlet of the air compressor. Inspect the condition of air hoses for cracks and wear. Replace worn or weak air hoses before they burst under pressure causing injuries.

Figure 6-9 shows common end cap fittings for standard air hoses.



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Figure 6-9.—Common fittings.

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Component Parts, Continued

Regulators

Regulators control the amount of air the air supply provides to the airbrush. They do not control how much air the air source produces. Regulators, located on air compressors or cylinders, are adjustable and may vary air pressure creating special effects or compensating for pigment viscosity. An ideal working air pressure for an airbrush is 25 to 30 PSI. Once the compressor reaches the desired air pressure, excess air is released by a valve (on air compressors without tanks) or diverted into a storage tank. Unregulated air supplies provide uneven air flow that is sometimes more or less than the ideal PSI for airbrush use. Lowering air pressure produces stipple or granulated effects. Fluctuating pressure produces splattered spray patterns. The greater the increase or decrease in pressure, the more pronounced the effect on the spray pattern. Most regulators have a brass screw fitting that attaches to the top of the air outlet of an air compressor or cylinder of gas.

Figure 6-10 shows how the dial of a regulator may appear.

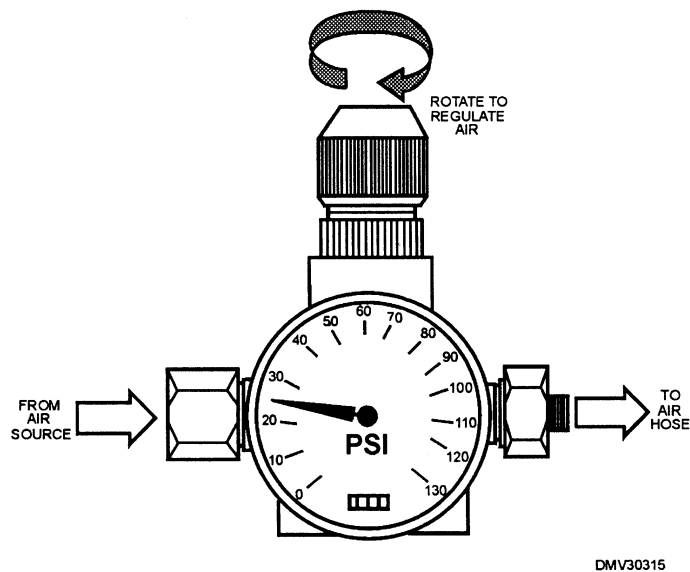


Figure 6-10.—A regulator dial.

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Component Parts, Continued

Moisture traps Moisture traps filter moisture from the air provided by the air source before the air reaches the airbrush. Although not having a moisture trap does not prevent you from using an airbrush system, they are invaluable in areas of high humidity and prevent your art from receiving water droplets with the pigment. Install moisture traps on air hoses between the airbrush and air source. The air hose may have to be severed and recapped with fittings contained on each end of the moisture trap. Periodically inspect moisture traps for rust or debris.

Figure 6-11 illustrates the position of the moisture trap.

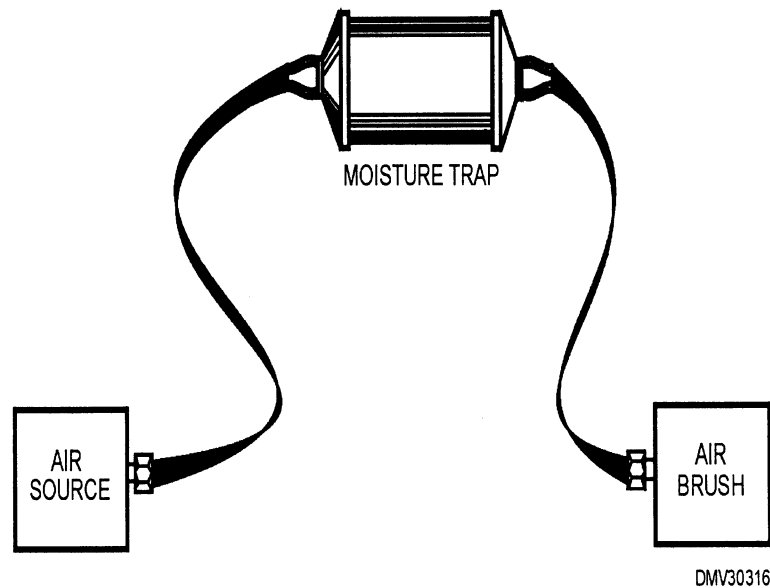


Figure 6-11.—The positioning of the moisture trap.

Maintenance

Introduction

Maintaining an airbrush system in peak condition is the key to trouble-free operations in the field. Always refer to the manufacturer's instruction book for maintenance procedures for the airbrush and air compressor.

Cleanliness

Keep your equipment and work area clean. Small bits of debris are magnified by sprayed pigment and may ruin illustrations.

Cleaning airbrushes

Most airbrush system breakdowns occur when paint clogs air passages. Thoroughly clean airbrushes immediately after use. If you are air painting and spraying is interrupted for any length of time, flush pigment from the airbrush and color cup or bottle. A small amount of petroleum jelly, NOT OIL, on the threads of the nozzle will help prevent pigment encrustation.

To flush color from the airbrush and color cup:

| Step | Action |
|------|--|
| 1 | Dump out remaining paint and rinse color cup with appropriate solvent. Use a small bristle brush to loosen any dry or encrusted pigment. |
| 2 | Open the nozzle to allow air and solvent to flow freely. |
| 3 | Add clean solvent to the color cup and blow solvent through the airbrush. |
| 4 | Repeat step 3 until the solvent comes out of the nozzle clear. |
| 5 | Remove the color cup and blow only air through the airbrush to remove remaining solvent and dry internal parts. |

Continued on next page

Maintenance, Continued

Cleaning airbrushes (Continued)

Cleaning an airbrush with a bottle is slightly different from cleaning an airbrush with a color cup.

To flush color from the airbrush and bottle:

| Step | Action |
|------|--|
| 1 | Hold a sponge tightly against the nozzle of the airbrush. |
| 2 | Depress the finger lever. This will blow color back into the bottle. |
| 3 | Remove the bottle of paint and attach a bottle of solvent. |
| 4 | Blow solvent through the airbrush into the sponge until the solvent comes out clear. |
| 5 | Remove the bottle and blow only air through the airbrush to remove any remaining solvent and dry internal parts. |
| 6 | Clean the bottle thoroughly, removing dry or encrusted pigment with a small bristle brush. |

Airbrushes do not require disassembly for cleaning, but you should occasionally check the airbrush internally to see if the needle is properly seated. Always protect the needlepoint. Damage, no matter how slight, will cause the airbrush to malfunction. Replace damaged needles.

To check the position of the needlepoint:

| Step | Action |
|------|---|
| 1 | Unscrew the handle (figure 6-12). |
| 2 | Loosen the needle locknut by turning it counterclockwise (figure 6-13). |
| 3 | Remove the needle gently from the airbrush nozzle (figure 6-14). |

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Maintenance, Continued

Cleaning airbrushes (Continued)

Figure 6-12 shows how to expose the needlepoint.

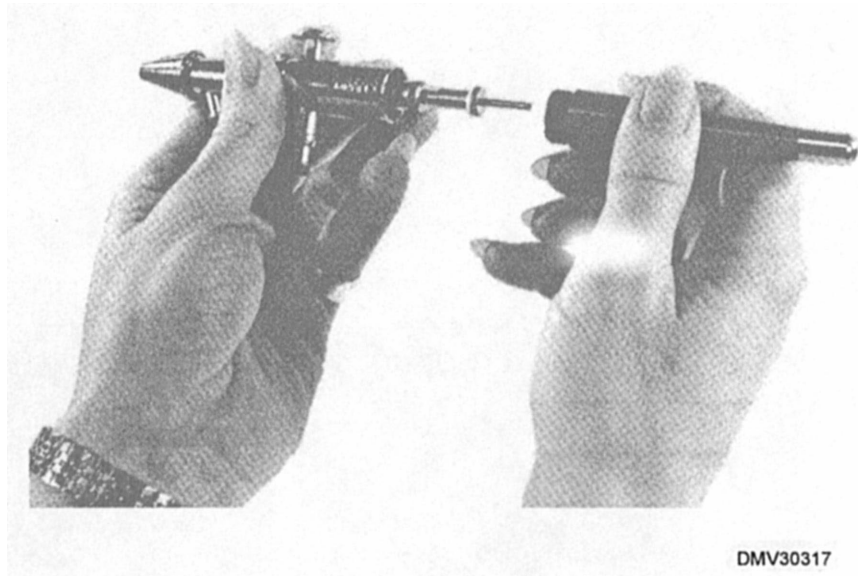


Figure 6-12.—Exposing the needlepoint.

Figure 6-13 illustrates the loosening of the needle locknut.

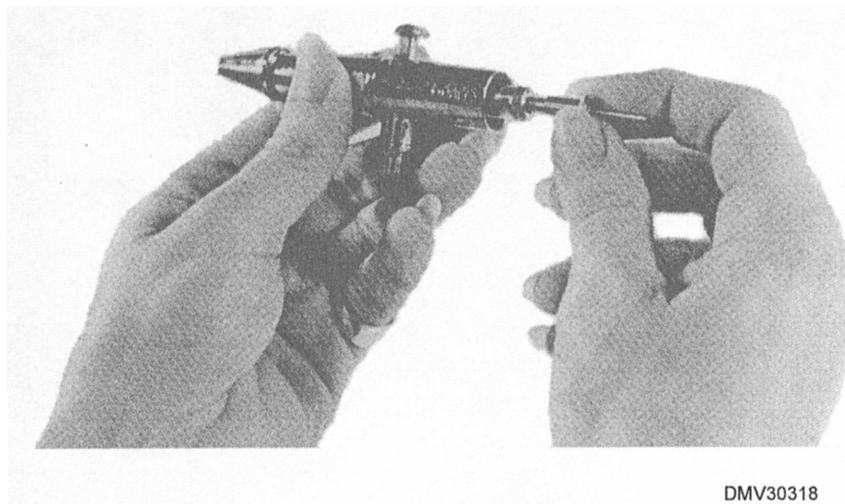


Figure 6-13.—Loosening the needle locknut.

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Maintenance, Continued

Cleaning airbrushes (Continued)

Figure 6-14 shows the needlepoint removed from the airbrush.

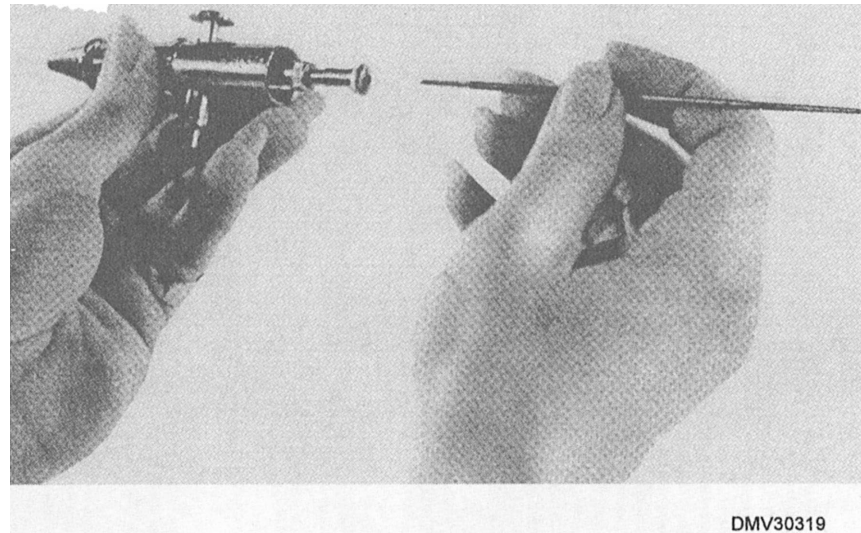


Figure 6-14.—Removing the needlepoint from the airbrush.

To reinsert the needlepoint:

| Step | Action |
|------|---|
| 1 | Push the finger lever forward. |
| 2 | Carefully push needle forward until it seats in the nozzle tip. |
| 3 | Replace the locknut turning it clockwise. Make sure the needlepoint is secure. Do not over tighten. |
| 4 | Replace handle of airbrush. |

Continued on next page

Maintenance, Continued

Cleaning airbrushes

Occasionally during operation, you may experience some equipment malfunctions. The following table lists typical problems, causes, and remedies.

| Problems | Causes | Remedies |
|--|---|---|
| Airbrush spits moisture | Very moist or humid working conditions Moisture in air passages | Install a moisture trap between the air source and airbrush |
| Airbrush fails to spray | Clogged fluid control Fluid too thick Insufficient air pressure | Clean or disassemble airbrush and soak in solvent Thin fluid with appropriate solvent Increase air pressure |
| Airbrush sprays in intermittent spurts | Air leaks in hose connections Clogged airhole in lid of paint bottle | Inspect and tighten connections Clean airhole |

Compressor maintenance

Air compressors are normally maintenance free. However, air compressors with storage tanks do require draining the storage tank of air. Failure to drain the air from the storage tank causes rust in the tank from condensate build-up. Rust weakens the tank walls causing a rupture under pressure. Drain the air from the air compressor storage tank by turning the petcock valve located on the underside of the tank to the full open position. You will hear the rush of air. When the hissing subsides, the tank is empty. Close the petcock before using the compressor again.

Airbrush Pigments

Introduction

Not all paints are suitable for airbrush application. Knowing what paints your airbrush can handle will extend the useful life of the equipment. Refer to the manufacturer's instructions for the type of pigments your airbrush is designed to use.

Pigments

Pigments for the airbrush are liquids such as watercolors, retouch greys, inks, dyes, and oil colors. Pigments must be finely ground, thoroughly mixed, and free of lumps or impurities. Make it a practice to routinely strain pigments through a nylon stocking or fine mesh screen before using. Normally, standard airbrushes cannot handle lacquers or enamels. There are special airbrushes for lacquers or enamels that can withstand the deleterious effects of caustic solvents.

Pigment viscosity

Pigment viscosity refers to how thick or thin the mixture of pigment and solvent or vehicle in the color cup is mixed. If paint is too thick, it will not atomize and spray from the nozzle; therefore, add thinners to the paint. If paint is too thin, it will not cover properly and will run very quickly. Overly thinned paint may also dry too rapidly. Judging paint correctly requires practice and patience.

Solvents for pigments

Solvents thin or dilute the consistency of pigment. Water-based paints, inks, dyes, and retouch greys require water for thinning or clean-up. Oil-based pigments require solvents for dilution or clean-up. Make sure you match the pigment to the solvent or the pigment will curdle and may permanently ruin the airbrush.

Mixing pigments

When preparing pigments for airbrushing, mix enough pigment to cover an entire area. If the paint is a custom-mixed color, the likelihood of preparing a second-batch, exact match is slim. Also, stopping in the middle of an air painting session is an inconvenient time to stop to remix color.

Pigment stain

Colors with chemically composed pigmentation have strong residual colors that may stain other colors. Pigment dried or encrusted in the color cup or bottle may redissolve when saturated with another color of the same solvent base and bleed into the other color.

Preparing To Airbrush

Introduction Proper preparation before sitting down to airbrush saves many hours of frustration. Gather the materials you need to airbrush. Have the assorted equipment and consumables readily available and arrange time when you will have the least interruptions.

Thumbnails Thumbnail sketches are small images of how you expect the finished art to look. Prepare preliminary thumbnail sketches to determine layout. Select an appropriate layout and create a comprehensive thumbnail sketch indicating the areas of light, dark, and color. Use a thumbnail sketch as you would a map, veering only slightly and when necessary. Do NOT attempt to make decisions on shading and color as you air paint because corrections are almost impossible once you begin spraying.

Painting surfaces Select a paper or substrate on which to paint. Substrates include masonite, metal, canvas, or fabric. Mount paper or substrates to a solid surface if you feel the moisture of painting will warp the surface. The paper or substrate must be free of fingerprints, cuts, holes, glue, paints, or other imperfections. Any texture on the paper or substrate will show. Spraying on a textured surface at an angle other than 90° magnifies texture. For example, crumpling paper, then spraying at a low angle creates an affect resembling mountain ranges.

Figure 6-15 illustrates how crumpling paper and spraying at a low angle resembles mountain ranges.



Figure 6-15.—Crumpled paper sprayed at an angle less than 90 degrees resembles mountain ranges.

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Preparing to Airbrush, Continued

Masks

Masks are moveable patterns or patches, similar to templates and may be made of acetate or heavy weighted paper. Masks protect areas that are NOT to be painted. Cut a mask in any desired shape and place over the area of the drawing. Setting the mask directly on the drawing surface and spraying on it will create a hard-edged line. Raising the mask from the drawing surface allows paint overspray to seep under the edge of the mask softening the line.

Figure 6-16. shows a hard-edged line created by a mask.

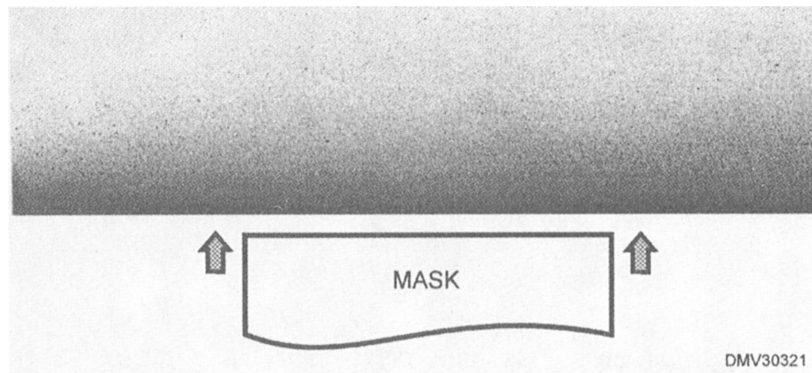


Figure 6-16.—A hard-edged line created by a mask.

Figure 6-17 shows a soft-edged line created by raising the edge of the mask off the drawing surface.

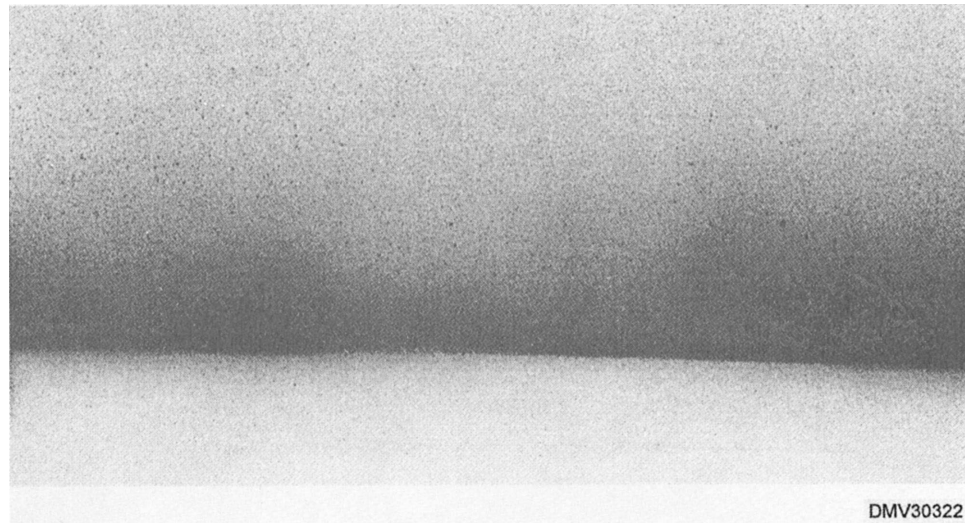


Figure 6-17.—A soft-edged line created by a raised mask.

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Preparing to Airbrush, Continued

Friskets

A frisket is a transparent or translucent adhesive-backed sheet used to protect areas of the drawing you do NOT want painted. Place a frisket over the drawing, gently cut and remove the areas of the frisket to be painted. Use a sharp blade and only enough pressure to cut through the frisket. Excessive pressure scores or scars the drawing, or worse yet, may slice all the way through the substrate. Apply pressure lightly to the frisket. No air bubbles should remain under the frisket. Make sure the edges of a frisket are firmly in place to prevent overspray from seeping under them. Remove friskets from painted surfaces carefully and remove excess adhesive with your finger or a rubber cement pick-up.

To apply friskets:

| Step | Action |
|------|--|
| 1 | Place the frisket over the drawing. |
| 2 | Carefully cut the frisket on the outline of the drawing. |
| 3 | Remove the frisket from the areas you wish to paint. |
| 4 | Apply light pressure to the frisket squeezing out all air bubbles. |
| 5 | Make sure all edges of the frisket are firmly adhered. |

To remove friskets:

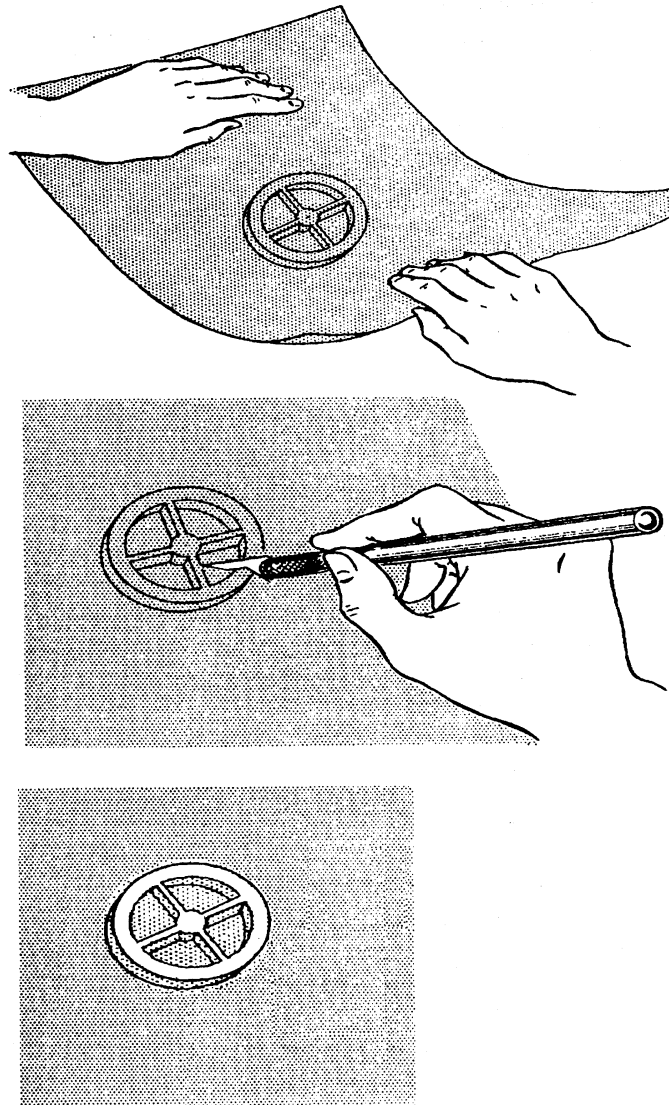
| Step | Action |
|------|--|
| 1 | Allow the pigment to dry before removing frisket. |
| 2 | Carefully peel the frisket away from the drawing surface. |
| 3 | Discard the frisket or return the frisket to its backing sheet for storage if you must reuse the same frisket later. |
| 4 | Touch up any scratches or pick-off from the outline of the shape that was painted. |

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Preparing to Airbrush, Continued

Friskets (Continued)

Figure 6-18 shows a frisket on a wheel.



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Figure 6-18.—Placing frisket over an illustration.

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